

**Individual Life and Annuities Design and Pricing (DP) Exam
Canada
November 2007**

Exam: ILA – DP, Canada	
Learning Objectives	
1. Describe the product development process and how it applies to product development and design	

Learning Outcomes
The candidate will be able to:
A. Describe the steps in the control cycle process within the context of product development
i) ID problem
ii) Design product
iii) Monitor
B. For a given product/situation, describe the steps in the product development process
i) Idea Generation
ii) Feasibility
iii) Planning the design
iv) Setting out the requirements
v) Actuarial development
▪ Assumptions
▪ Profit measures
▪ Modeling features or benefits
- Equity linked (B-S)
- Embedded options
- ROP
- Secondary guarantees
- Payout Annuity Benefits
- Etc
▪ Investment Strategy
▪ Choice of Model
vi) Launch the product
C. Describe the iterative processes in the planning, and actuarial development steps
D. Manage a product once it's on the books given its pricing, describe reasons why actual varies from expected given a situation and recommend changes to non-guaranteed elements for deviations from expected

Syllabus Resources
<ul style="list-style-type: none"> • Atkinson & Dallase, <i>Life Insurance Products and Finance</i>, Chapter 2, 3, 4, 5, 11, 14 • LOMA <i>Life and Health Ins. Marketing</i> pp.242-243 • ILA-D100-07: <i>World- Class New Product Development</i> – Dimancescu and Dwenger, 1996 – chapters 3, 4, 5 &6 • ILA-D101-07 (Formerly 8IC-100-00): Product Development Trends • ILA-D102-07 (Formerly 8IC-107-04): Equity Indexed Annuities: Product Design and Pricing Considerations • ILA-D103-07: Innovative Financing: Life Insurance Securitization • ILA-D111-07 LOMA, <i>Product Design for Life Insurance & Annuities</i>, Chapter 1, Chapter 2 pages 31-33 • Shane Chalke, “Macro Pricing: A Comprehensive Product Development Process”, <i>TSA XLIII</i>, 1991 http://www.soa.org/library/research/transactions-of-society-of-actuaries/1990-95/1991/january/tsa91v436.pdf • “Incorporating Dynamic Policyholder Behavior Assumptions into Pricing of Variable Annuities”, Rebecca Scotchie, <i>Product Matters</i>, September 2006 http://66.216.104.119/library-pdf/PDN0609.pdf • “Inflation-Indexed Income Annuities: Pricing Considerations and Investment Strategies”, Simpa Baiye, <i>Product</i>

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- Matters, September, 2006 <http://66.216.104.119/library-pdf/PDN0609.pdf>
- “Pitfalls in EI Products” March (45)1998, <http://www.soa.org/library/newsletters/product-development-news/1998/march/pdn9803.pdf>
 - “Recent Developments in the Annuity World” July (59)2004 <http://www.soa.org/library/newsletters/product-development-news/2004/july/pdn0407.pdf>
 - “EIUL: The Devil’s in the Details” August (62)2005 <http://www.soa.org/library/newsletters/product-development-news/2005/august/pdn0508.pdf>
 - “Variable Annuity Risk and Seeking the Perfect Hedge”, July (56)2003 <http://www.soa.org/library/newsletters/product-development-news/2003/july/pdn0307.pdf>
 - “Whither the VA?” November (57)2003 <http://www.soa.org/library/newsletters/product-development-news/2003/november/pdn0311.pdf>
 - “Recent Developments in the Annuity World” July (59) 2004\
 - “What’s Backing Your Life Insurance Guarantee?” <http://www.soa.org/library/newsletters/the-actuary-magazine/2005/february/wha2005february.aspx>
 - “VUL Secondary Guarantees: Catalyst for Sales Rebound”, July (56)2003 <http://www.soa.org/library/newsletters/product-development-news/2003/july/pdn0307.pdf>
 - “Managing Variable Policyholder Behavior Risk”, March (61)2005 <http://www.soa.org/library/newsletters/product-development-news/2005/march/pdn0503.pdf>
 - “Return of Premium Term”, July (59)2004 <http://www.soa.org/library/newsletters/product-development-news/2004/july/pdn0407.pdf>
 - “Term Mortality and Lapses” August (62) 2005 <http://www.soa.org/library/newsletters/product-development-news/2005/august/pdn0508.pdf>
 - “Mortality Table Slope – the Discussion Goes On”, *Product Matters* July 2004 <http://www.soa.org/library/newsletters/product-development-news/2004/july/pdn0407.pdf>
 - “Does Preferred Wear Off? *Product Matters*, July 2004 <http://www.soa.org/library/newsletters/product-development-news/2004/july/pdn0407.pdf>
 - “Designing & Pricing LTCI Combination Insurance Products” *Long Term Care News*, December (13) 2004 <http://www.soa.org/library/newsletters/long-term-care/2004/december/ltc0412.pdf>
 - “*The Process of Premium Formulation*” Bob Shapiro 50th Anniversary monograph <http://www.soa.org/library/monographs/50th-anniversary/product-development-section/1999/january/m-as99-3-v.pdf>
 - ILA-D600-07: CIA Report – Lapse Experience Under Lapse Supported Policies (October 1999)
 - ILA-D601-07: CIA Report – Lapse Experience under Universal Life Level Cost of Insurance Policies (June 2003)

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Exam: ILA – DP, Canada	TOPIC:
Learning Objectives	
2. Understanding the drivers for product design (the idea step)	
Learning Outcomes	
For a given context or product, the candidate will be able to:	
<ul style="list-style-type: none"> A. Identify customers – internal and/or external B. Analyze the advantage/disadvantages of different internal drivers C. Analyze how the forces of the economy and demographics, impact product design D. Analyze consumer behavior impact product design. E. Analyze how the forces of the marketplace and competition impact product design. F. Describe the questions to ask the sales and marketing (incl. Agents, brokers and direct marketing) G. Describe how investment policy can impact design H. Describe how tax/regulation can drive (not just constrain) product design 	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson & Dallas, Chapter 8 • <i>Investment Guarantees</i>, Hardy, (p. 14 & 142-143) • <i>Life and Health Insurance Marketing</i>, LOMA, , Third Edition, Chapters 5-9, 12-17 • <i>Marketing for Actuaries</i>, 2000 Edition, All Chapters 	

Exam: ILA – DP, Canada	
Learning Objectives	
3. Understand the feasibility step of product design (prudent, practical)	
Note: This step is before pricing	
Learning Outcomes	
For a given context or product, the candidate will be able to:	
<ul style="list-style-type: none"> A. Describe considerations for prudent and practical decision making B. Assess the risks underlying the design of certain products and features within those products as well as suggestions as to the management of such risks. C. Describe and analyze the tax and regulatory constraints – policyholder perspective 	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson & Dallas, Chapter 2 • <i>Canadian Taxation of Life Insurance</i>, Cuperfain and Marino, 3rd Edition, Chapter 1, 2, 3, 12–14, 18 • <i>Investment Guarantees</i>, Hardy, Ch. 1 • ILA-D111-07:LOMA, <i>Product Design for Life Insurance & Annuities</i>, Chapter 1 • ILA-D104-07 <i>Actuarial Aspects of Individual Life Insurance and Annuity Contracts</i>, chapter 3 	

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Learning Objectives	
4. Understand how to plan for and design new products	
Learning Outcomes	
The candidate will be able to:	
A. Describe in detail the basic benefit/product types and their uses,	
A. Recommend designs for products and features to reach particular goals	
B. Demonstrate the integration of the results of the first steps into a recommended design	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson & Dallas, Ch. 1 & 2 • ILA-D105-07 (Formerly 8IC-102-00): Life and Annuity Products and Features 	

Exam: ILA – DP, Canada	
Learning Objectives	
5. Consider the operational requirements for a particular product	
Learning Outcomes	
For a given context or product, the candidate will be able to:	
A. Identify gaps between the product design and the operations of the company and procedures and systems	
B. Recommend ways to close the gaps	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson & Dallas, Chapter 2, Product Development • “Hidden Costs of Administering Complex Products” in Nov. 2003 Issue of Product Matters http://www.soa.org/library/newsletters/product-development-news/2003/november/pdn0311.pdf • “Hidden Costs of Product Complexity” in Nov. 2003 Issue of Product Matters http://www.soa.org/library/newsletters/product-development-news/2003/november/pdn0311.pdf 	

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Exam: ILA – DP, Canada	
Learning Objectives	
6. Understand the relationship between the product design and the selection of appropriate assumptions for pricing the product (mortality, persistency, investment returns, expenses, etc.).	
Learning Outcomes	
The candidate will be able to:	
<p>A. Identify the assumptions needed for a particular product design, including any embedded options, expenses, and reinsurance.</p> <p>B. Select appropriate assumptions for a given product design, reflecting</p> <ol style="list-style-type: none"> i) product characteristics ii) available experience data iii) the marketplace iv) underwriting v) distribution channel characteristics <p>C. Explain the effect of each assumption on product pricing.</p> <p>D. Incorporate expenses (fixed, variable, marginal and taxes (income and premium) into product pricing</p> <p>E. How assumption setting reflects investment strategy e.g., hedging</p> <p>F. Special assumptions per special features – eg equity-linked, invest crediting,</p> <p>G. Data Quality (experience studies)</p>	
Syllabus Resources	
<ul style="list-style-type: none"> • Atkinson & Dallas, <i>Life Insurance Products and Finance</i>, Chapter 3, 7, 9; Chapter 13.4 Annuity and Investment Products • Hardy, <i>Investment Guarantees</i>, Ch. 2, 6, 8 • ILA-D106-07 (Formerly 8IC-201-00): Gross Premiums for Disability Waiver Benefits • ILA-D107-07 (Formerly 8IC-200-00): Experience Assumptions for Individual Life Insurance and Annuities • Living to 100 “Ending the Mortality Table” http://www.soa.org/library/monographs/retirement-systems/living-to-100-and-beyond/2005/january/m-li05-1-ix.pdf • Pricing a Select and Ultimate Annual Renewable Term Product, <i>TSA Vol 32</i> http://www.soa.org/library/research/transactions-of-society-of-actuaries/1980/january/tsa80v3216.pdf • ILA-D102-07 (Formerly 8IC-107-04): Equity Indexed Annuities - Product Design and Pricing Considerations • ILA-D108-07 (Formerly 8FE-316-03): Asset/Liability Management • ILA-D109-07: Corporate Default and Recovery Rates, 1920-2006 • ILA-D105-07 (Formerly 8IC-102-00): Life and Annuity Products and Features • ILA-D602-07: Proceedings Volume XXIX, No 1: PD#11: Preferred Underwriting Discussion • ILA-D603-07: Proceedings: PD #24, Oct 2003, Preferred Term Update – An Update • ILA-D604-07: Proceedings: H5: Developments in the Canadian Segregated Fund Marketplace, Nov 2004 • ILA-D605-07: Proceedings: Annuity Pricing, Session 4105, Nov 2005 • ILA-D606-07 Proceedings: Hot Topics in Living Benefits Pricing and Product Design, Session 1102 Nov 2005 • ASOP #23 Data Quality http://www.actuarialstandardsboard.org/pdf/asops/asop023_097.pdf 	

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Learning Objectives	
7. Understand the use of profit measures in Pricing	
Learning Outcomes	
The candidate will be able to:	
<ul style="list-style-type: none"> A. Measure profitability B. Analyze array of profit measures C. Determine statutory vs. GAAP profit measures D. Describe the capital requirements for the product E. Recommend appropriate measure for particular problem your solving 	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson & Dallas, Chapter 10, 11 • “Pricing in a Return-on-Equity Environment”, TSA XXXIX, 1987 http://www.soa.org/library/research/transactions-of-society-of-actuaries/1987/january/tsa87v3911.pdf 	

Exam: ILA – DP, Canada	
Learning Objectives	
8. Understand pricing for particular features and benefits	
Learning Outcomes	
The candidate will be able to:	
<ul style="list-style-type: none"> A. Price products with different features including: <ul style="list-style-type: none"> i) Riders ii) Policyholder Dividends iii) Equity linked (B-S) iv) Embedded Options v) ROP vi) Secondary Guarantees vii) Payout Annuity Benefits viii) Reinsurance ix) Crediting methodology x) Other non-guaranteed elements B. Identify the most influential assumptions for the particular feature 	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson & Dallas, Chapter 13 • <i>Investment Guarantees</i>, Hardy, Ch. 6, 8(pp.133–143 only), 12, 13 • ILA-D102-07 (Formerly 8IC-107-04): Equity Indexed Annuities: Product Design and Pricing Considerations • ILA-D106-07 (Formerly 8IC-201-00): Gross Premiums for Disability Waiver Benefits • ILA-D110-07 (Formerly 8IC-103-01): Policyholder Dividends • ILA-D105-07 (Formerly 8IC-102-00): Life and Annuity Products and Features • Return of Premium Term, Product Matters July 2004 http://www.soa.org/library/newsletters/product- 	

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[development-news/2004/july/pdn0407.pdf](http://www.actuaries.ca/development-news/2004/july/pdn0407.pdf)

- CIA Recommendations – Dividend Determination and Illustration”, June 1982
<http://www.actuaries.ca/members/publications/1982/8207e.pdf>

Exam: ILA – DP, Canada	
Learning Objectives	
9. Understand modeling approaches and interpretation	
Learning Outcomes	
The candidate will be able to: A. Explain how a stochastic model would be used for pricing B. Describe the advantages and disadvantages of stochastic and deterministic modeling approached C. Interpret results of a stochastic model	
Syllabus Resources	
<ul style="list-style-type: none">• <i>Investment Guarantees</i>, Hardy, Ch. 9• “Stochastic Pricing“ <i>RSA Vol 27, No 2</i> Session 86PD http://www.soa.org/library/proceedings/record-of-the-society-of-actuaries/2000-09/2001/january/rsa01v27n286pd.pdf	